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1 Meta data management: Rondo: a programming platform for generic model management   ■
Sergey Melnik, Erhard Rahm, Philip A. Bernstein
June 2003 **Proceedings of the 2003 ACM SIGMOD international conference on Management of data**
Publisher: ACM Press
Full text available: 📄 pdf(392.38 KB)   Additional Information: full citation, abstract, references, index terms

> Model management aims at reducing the amount of programming needed for the development of metadata-intensive applications. We present a first complete prototype of a generic model management system, in which high-level operators are used to manipulate models and mappings between models. We define the key conceptual structures: models, morphisms, and selectors, and describe their use and implementation. We specify the semantics of the known model-management operators applied to these structures, ...

2 From UML models to software performance results: an SPE process based on XML interchange formats   ■
Connie U. Smith, Catalina M. Lladó, Vittorio Cortellessa, Antinisca Di Marco, Lloyd G. Williams
July 2005 **Proceedings of the 5th international workshop on Software and performance WOSP '05**
Publisher: ACM Press
Full text available: 📄 pdf(356.26 KB)   Additional Information: full citation, abstract, references, index terms

> The SPE process uses multiple performance assessment tools depending on the state of the software and the amount of performance data available. This paper describes two XML based interchange formats that facilitate using a variety of performance tools in a plug-and-play manner thus enabling the use of the tool best suited to the analysis. The Software Performance Model Interchange Format (S-PMIF) is a common representation that is used to exchange information between (UML-based) software design ...

> **Keywords**: SPE process, UML, XML, automated model building, interchange format, methods and tools, performance model, software performance engineering, tool interoperability

3 XML data modeling and storage: A temporal data model and management system for normative texts in XML format   ■

Fabio Grandi, Federica Mandreoli, Paolo Tiberio, Marco Bergonzini
November 2003 **Proceedings of the 5th ACM international workshop on Web information and data management**
Publisher: ACM Press
Full text available: ⊞ pdf(189.41 KB)   Additional Information: full citation, abstract, references, index terms

In this paper,we present the results of an on-going research activity concerning the temporal management of normative texts in XML format. In particular, four temporal dimensions (publication,validity,efficacy and transaction times) are used to correctly represent the evolution of norms in time and their resulting versioning. Hence, we introduce a multiversion data model based on XML schema and de?ne basic mechanisms for the management of norm texts. Finally, we describe a prototype management s ...

Keywords: legal information systems, temporal XML

4 Technical papers: software architecture: An infrastructure for the rapid development of XML-based architecture description languages
Eric M. Dashofy, André van der Hoek, Richard N. Taylor
May 2002 **Proceedings of the 24th International Conference on Software Engineering**
Publisher: ACM Press

Full text available: ⊞ pdf(1.40 MB)   Additional Information: full citation, abstract, references, citings, index terms

Research and experimentation in software architectures over the past decade have yielded a plethora of software architecture description languages (ADLs). Continuing innovation indicates that it is reasonable to expect more new ADLs, or at least ADL features. This research process is impeded by the difficulty and cost associated with developing new notations. An architect in need of a unique set of modeling features must either develop a new architecture description language from scratch or unde ...

5 XML transactions: An object-oriented extension of XML for autonomous web applications
Hasan M. Jamil, Giovanni A. Modica
November 2002 **Proceedings of the eleventh international conference on Information and knowledge management**
Publisher: ACM Press
Full text available: ⊞ pdf(277.52 KB)   Additional Information: full citation, abstract, references, index terms

While the idea of extending XML to include object-oriented features has been gaining popularity in general, the potential of inheritance in document design has not been well recognized in contemporary research. In this paper we demonstrate that XML with dynamic inheritance aids better document designs and decreased management overheads and support increased autonomy. As an extended application, we point out that dynamic inheritance also helps effective automated web portal and ontology designs.W ...

Keywords: XML, autonomous objects, document structuring, dynamic object hierarchy, inheritance, object-orientation, web

6 An analysis of XML database solutions for the management of MPEG-7 media descriptions
Utz Westermann, Wolfgang Klas
December 2003 **ACM Computing Surveys (CSUR)**, Volume 35 Issue 4
Publisher: ACM Press

Additional Information:

Full text available: pdf(448.76 KB)   full citation, abstract, references, index terms, review

MPEG-7 constitutes a promising standard for the description of multimedia content. It can be expected that a lot of applications based on MPEG-7 media descriptions will be set up in the near future. Therefore, means for the adequate management of large amounts of MPEG-7-compliant media descriptions are certainly desirable. Essentially, MPEG-7 media descriptions are XML documents following media description schemes defined with a variant of XML Schema. Thus, it is reasonable to investigate curren ...

Keywords: MPEG-7, XML database systems, multimedia databases

7 Session 3: XML applications: XrML -- eXtensible rights Markup Language

Xin Wang, Guillermo Lao, Thomas DeMartini, Hari Reddy, Mai Nguyen, Edgar Valenzuela
November 2002 **Proceedings of the 2002 ACM workshop on XML security**
Publisher: ACM Press

Full text available: pdf(466.82 KB)   Additional Information: full citation, abstract, references, citings, index terms, review

XrML (eXtensible rights Markup Language) is an XML-based language for digital rights management (DRM), providing a universal method for specifying rights and conditions associated with the use and protection of digital content and services. Originally developed at Xerox's Palo Alto Research Center (PARC), the specification facilitates the creation of an open architecture for digital rights management of content or services. It can be integrated with both existing and new DRM systems. XrML is a g ...

Keywords: DRM, XML, content distribution and usage, digital rights management, rights, specification languages, standards

8 Special section on advanced XML data processing: Preservation of digital data with self-validating, self-instantiating knowledge-based archives

Bertram Ludäscher, Richard Marciano, Reagan Moore
September 2001 **ACM SIGMOD Record**, Volume 30 Issue 3
Publisher: ACM Press

Full text available: pdf(881.20 KB)   Additional Information: full citation, abstract, references, index terms

Digital archives are dedicated to the long-term preservation of electronic information and have the mandate to enable sustained access despite rapid technology changes. Persistent archives are confronted with heterogeneous data formats, helper applications, and platforms being used over the lifetime of the archive. This is not unlike the interoperability challenges, for which mediators are devised. To prevent technological obsolescence over time and across platforms, a migration approach for per ...

9 SchemaSQL: An extension to SQL for multidatabase interoperability

Laks V. S. Lakshmanan, Fereidoon Sadri, Subbu N. Subramanian
December 2001 **ACM Transactions on Database Systems (TODS)**, Volume 26 Issue 4
Publisher: ACM Press

Full text available: pdf(435.89 KB)   Additional Information: full citation, abstract, references, citings, index terms, review

We provide a principled extension of SQL, called *SchemaSQL*, that offers the capability of uniform manipulation of data and schema in relational multidatabase systems. We develop a precise syntax and semantics of *SchemaSQL* in a manner that extends traditional SQL syntax and semantics, and demonstrate the following. (1) *SchemaSQL* retains the flavor of SQL while supporting querying of both data and schema. (2) It can be

used to transform data in a database in a structure substa ...

Keywords: Information integration, SchemaSQL, multidatabase systems, restructuring views, schematic heterogeneity

10 XML: Schemapath, a minimal extension to xml schema for conditional constraints

Claudio Sacerdoti Coen, Paolo Marinelli, Fabio Vitali

May 2004 **Proceedings of the 13th international conference on World Wide Web**

Publisher: ACM Press

Full text available: pdf(198.40 KB)   Additional Information: full citation, abstract, references, index terms

In the past few years, a number of constraint languages for XML documents has been proposed. They are cumulatively called *schema languages* or validation languages and they comprise, among others, DTD, XML Schema, RELAX NG, Schematron, DSD, xlinkit. One major point of discrimination among schema languages is the support of co-constraints, or co-occurrence constraints, e.g., requiring that attribute A is present if and only if attribute B is (or is not) presentin the same element. Although ...

Keywords: co-constraints, schema languages, schemapath, xml

11 Industrial papers: metadata management for data integration: Meta-data version and configuration management in multi-vendor environments

John R Friedrich

June 2005 **Proceedings of the 2005 ACM SIGMOD international conference on Management of data**

Publisher: ACM Press

Full text available: pdf(544.92 KB)   Additional Information: full citation, abstract, references

Nearly all components that comprise modern information technology, such as Computer Aided Software Engineering (CASE) tools, Enterprise Application Integration (EAI) environments, Extract/Transform/Load (ETL) engines. Warehouses, EII, and Business Intelligence (BI), contain a great deal of meta-data, which often drive much of the tool's functionality. These metadata are distributed and duplicated, are often times actively interacting with the tools as they process data, and are generally represe ...

12 Algorithms and programming models for efficient representation of XML for Internet applications

Neel Sundaresan, Reshad Moussa

April 2001 **Proceedings of the 10th international conference on World Wide Web**

Publisher: ACM Press

Full text available: pdf(352.97 KB)   Additional Information: full citation, references, citings, index terms

Keywords: DOM, SAX, WBXML, XML, compression

13 Web technologies and applications (WTA): Sanitizing using metadata in MetaXQuery

Hao Jin, Curtis Dyreson

March 2005 **Proceedings of the 2005 ACM symposium on Applied computing SAC '05**

Publisher: ACM Press

Full text available: pdf(96.61 KB)   Additional Information: full citation, abstract, references, index terms

Metadata plays an important role in describing and proscribing data in both traditional and

XML applications. In this paper, we present an extension of the XML data model and XQuery query language to certify the reachability of data and to sanitize data with the existence of metadata, especially proscriptive metadata. The data model extension is called MetaDOM, and the query language is called MetaXQuery. This paper describes a certify function to check if the metadata in the data model is corre ...

Keywords: XML, XQuery, data reachability, metadata

14 XML dataspaces for mobile agent coordination

Giacomo Cabri, Letizia Leonardi, Franco Zambonelli
March 2000 **Proceedings of the 2000 ACM symposium on Applied computing - Volume 1**
Publisher: ACM Press
Full text available: pdf(785.40 KB)   Additional Information: full citation, references, citings, index terms

15 Web application design: Building adaptable and reusable XML applications with model transformations

Ivan Kurtev, Klaas van den Berg
May 2005 **Proceedings of the 14th international conference on World Wide Web**
Publisher: ACM Press
Full text available: pdf(194.71 KB)   Additional Information: full citation, abstract, references, index terms

We present an approach in which the semantics of an XML language is defined by means of a transformation from an XML document model (an XML schema) to an application specific model. The application specific model implements the intended behavior of documents written in the language. A transformation is specified in a model transformation language used in the Model Driven Architecture (MDA) approach for software development. Our approach provides a better separation of three concerns found in XML ...

Keywords: MDA, XML, XML processing, model transformations, transformation language

16 XML and architecture: XCube: XML for data warehouses

Wolfgang Hümmer, Andreas Bauer, Gunnar Harde
November 2003 **Proceedings of the 6th ACM international workshop on Data warehousing and OLAP**
Publisher: ACM Press
Full text available: pdf(272.32 KB)   Additional Information: full citation, abstract, references, index terms, review

Data warehouse systems are nowadays a well known and widely spread approach for supporting management decisions. In several companies or even across companies the idea of integrating several data warehouses into a virtual or federated data warehouse is of growing interest. But the technical and semantic problems are very demanding. An essential part for solving this problem is a standardized, vendor independent format for describing multidimensional data. This paper introduces XCube, a family of ...

Keywords: based on XML documents, between data warehouses, exchange of data cubes

17 Concept-based querying in mediator systems

Kai-Uwe Sattler, Ingolf Geist, Eike Schallehn

March 2005 **The VLDB Journal — The International Journal on Very Large Data Bases,**
Volume 14 Issue 1
Publisher: Springer-Verlag New York, Inc.
Full text available: pdf(329.34 KB)   Additional Information: <u>full citation</u>, <u>abstract</u>

One approach to overcoming heterogeneity as a part of data integration in mediator
systems is the use of metadata in the form of a vocabulary or ontology to represent
domain knowledge explicitly. This requires including this meta level during query
formulation and processing. In this paper, we address this problem in the context of a
mediator that uses a concept-based integration model and an extension of the XQuery
language called CQuery. This mediator has been developed as part of a project fo ...

Keywords: Data integration, Mediator systems, Query processing

18 <u>Model-driven design and deployment of service-enabled web applications</u>

Ioana Manolescu, Marco Brambilla, Stefano Ceri, Sara Comai, Piero Fraternali
August 2005 **ACM Transactions on Internet Technology (TOIT),** Volume 5 Issue 3
Publisher: ACM Press
Full text available: pdf(3.07 MB)   Additional Information: <u>full citation</u>, <u>abstract</u>, <u>references</u>, <u>index terms</u>

Significant effort is currently invested in application integration, enabling business
processes of different companies to interact and form complex multiparty processes. Web
service standards, based on WSDL (Web Service Definition Language), have been adopted
as process-to-process communication paradigms. However, the conceptual modeling of
applications using Web services has not yet been addressed. Interaction with Web
services is often specified at the level of the source code; thus, Web serv ...

Keywords: UML, Web application, Web services, WebML, modeling

19 <u>Coordination models, languages and applications: Coordination middleware for XML-
centric applications</u>

Paolo Ciancarini, Robert Tolksdorf, Franco Zambonelli
March 2002 **Proceedings of the 2002 ACM symposium on Applied computing**
Publisher: ACM Press
Full text available: pdf(904.80 KB)   Additional Information: <u>full citation</u>, <u>abstract</u>, <u>references</u>, <u>citings</u>, <u>index terms</u>

This paper focuses on coordination middleware for distributed applications based on active
documents and XML technologies. It introduces the main concepts underlying active
documents and XML Then, the paper goes into details about the problem of defining a
suitable middleware architecture to effectively support coordination activities in
applications including active documents and mobile agents, by specifically focusing on the
role played by XML technologies in that context. According to a simpl ...

20 <u>Document Databases: Requirements for XML document database systems</u>

Airi Salminen, Frank Wm. Tompa
November 2001 **Proceedings of the 2001 ACM Symposium on Document engineering**
Publisher: ACM Press
Full text available: pdf(141.89 KB)   Additional Information: <u>full citation</u>, <u>abstract</u>, <u>references</u>, <u>citings</u>, <u>index terms</u>

The shift from SGML to XML has created new demands for managing structured
documents. Many XML documents will be transient representations for the purpose of data
exchange between different types of applications, but there will also be a need for
effective means to manage persistent XML data as a database. In this paper we explore

requirements for an XML database management system. The purpose of the paper is not to suggest a single type of system covering all necessary features. Instead the pur ...

Keywords: XML, XML database systems, data definition, data manipulation, data modelling, structured documents

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1 **Taxonomy of XML schema languages using formal language theory**   ◼
Makoto Murata, Dongwon Lee, Murali Mani, Kohsuke Kawaguchi
November 2005 **ACM Transactions on Internet Technology (TOIT)**, Volume 5 Issue 4
Publisher: ACM Press
Full text available: 📄 pdf(1.34 MB)   Additional Information: full citation, abstract, references, index terms

> On the basis of regular tree grammars, we present a formal framework for XML schema
> languages. This framework helps to describe, compare, and implement such schema
> languages in a rigorous manner. Our main results are as follows: (1) a simple framework
> to study three classes of tree languages (local, single-type, and regular); (2) classification
> and comparison of schema languages (DTD, W3C XML Schema, and RELAX NG) based on
> these classes; (3) efficient document validation algorithms for these cla ...

> **Keywords:** XML, interpretation, schema, tree automaton, validation

2 **XML: Schemapath, a minimal extension to xml schema for conditional constraints**   ◼
Claudio Sacerdoti Coen, Paolo Marinelli, Fabio Vitali
May 2004 **Proceedings of the 13th international conference on World Wide Web**
Publisher: ACM Press
Full text available: 📄 pdf(198.40 KB)   Additional Information: full citation, abstract, references, index terms

> In the past few years, a number of constraint languages for XML documents has been
> proposed. They are cumulatively called *schema languages* or validation languages and
> they comprise, among others, DTD, XML Schema, RELAX NG, Schematron, DSD, xlinkit.
> One major point of discrimination among schema languages is the support of co-
> constraints, or co-occurrence constraints, e.g., requiring that attribute A is present if and
> only if attribute B is (or is not) presentin the same element. Although ...

> **Keywords:** co-constraints, schema languages, schemapath, xml

3 **Paper session 6: XML schemas and validation: DTDs versus XML schema: a**   ◼
practical study
Geert Jan Bex, Frank Neven, Jan Van den Bussche
June 2004 **Proceedings of the 7th International Workshop on the Web and
Databases: colocated with ACM SIGMOD/PODS 2004 WebDB '04**
Publisher: ACM Press

Full text available: 📄 pdf(274.60 KB)   Additional Information: <u>full citation</u>, <u>abstract</u>, <u>references</u>, <u>citings</u>

Among the various proposals answering the shortcomings of Document Type Definitions (DTDs), XML Schema is the most widely used. Although DTDs and XML Schema Definitions (XSDs) differ syntactically, they are still quite related on an abstract level. Indeed, freed from all syntactic sugar, XML Schemas can be seen as an extension of DTDs with a restricted form of specialization. In the present paper, we inspect a number of DTDs and XSDs harvested from the web and try to answer the following questio ...

4 <u>Schemas and semantics: Expressiveness of XSDs: from practice to theory, there and back again</u> ◼

Geert Jan Bex, Wim Martens, Frank Neven, Thomas Schwentick
May 2005 **Proceedings of the 14th international conference on World Wide Web**
Publisher: ACM Press
Full text available: 📄 pdf(231.25 KB)   Additional Information: <u>full citation</u>, <u>abstract</u>, <u>references</u>, <u>index terms</u>

On an abstract level, XML Schema increases the limited expressive power of Document Type Definitions (DTDs) by extending them with a recursive typing mechanism. However, an investigation of the XML Schema Definitions (XSDs) occurring in practice reveals that the vast majority of them are structurally equivalent to DTDs. This might be due to the complexity of the XML Schema specification and the difficulty to understand the effect of constraints on typing and validation of schemas. To shed some l ...

Keywords: XML schema, expressiveness, formal model

5 <u>XML schemas: integration and translation: NeT & CoT: translating relational schemas to XML schemas using semantic constraints</u> ◼

Dongwon Lee, Murali Mani, Frank Chiu, Wesley W. Chu
November 2002 **Proceedings of the eleventh international conference on Information and knowledge management**
Publisher: ACM Press
Full text available: 📄 pdf(321.89 KB)   Additional Information: <u>full citation</u>, <u>abstract</u>, <u>references</u>, <u>citings</u>, <u>index terms</u>

Two algorithms, called NeT and CoT, to translate relational schemas to XML schemas using various semantic constraints are presented. The XML schema representation we use is a language-independent formalism named XSchema, that is both precise and concise. A given XSchema can be mapped to a schema in any of the existing XML schema language proposals. Our proposed algorithms have the following characteristics: (1) NeT derives a nested structure from a flat relational model by repeatedly applying th ...

Keywords: XML, schema translation, semantic constraints

6 <u>XDuce: A statically typed XML processing language</u> ◼

Haruo Hosoya, Benjamin C. Pierce
May 2003 **ACM Transactions on Internet Technology (TOIT)**, Volume 3 Issue 2
Publisher: ACM Press
Full text available: 📄 pdf(242.48 KB)   Additional Information: <u>full citation</u>, <u>abstract</u>, <u>references</u>, <u>citings</u>, <u>index terms</u>, <u>review</u>

XDuce is a statically typed programming language for XML processing. Its basic data values are XML documents, and its types (so-called *regular expression types*) directly correspond to document schemas. XDuce also provides a flexible form of *regular expression pattern matching*, integrating conditional branching, tag checking, and subtree extraction, as well as dynamic typechecking. We survey the principles of XDuce's design,

develop examples illustrating its key features, describe i ...

Keywords: Type systems, XML, subtyping, tree automata

7 The essence of XML

Jérôme Siméon, Philip Wadler

January 2003 **ACM SIGPLAN Notices , Proceedings of the 30th ACM SIGPLAN-SIGACT symposium on Principles of programming languages POPL '03**, Volume 38 Issue 1

Publisher: ACM Press

Full text available: pdf(165.28 KB)   Additional Information: full citation, abstract, references, citings, index terms

The World-Wide Web Consortium (W3C) promotes XML and related standards, including XML Schema, XQuery, and XPath. This paper describes a formalization of XML Schema. A formal semantics based on these ideas is part of the official XQuery and XPath specification, one of the first uses of formal methods by a standards body. XML Schema features both named and structural types, with structure based on tree grammars. While structural types and matching have been studied in other work (notably XDuce, Re ...

Keywords: XML, XML schema, XPath, XQuery, validation

8 Papers from the 2003 international conference on Database theory: Incremental validation of XML documents

Andrey Balmin, Yannis Papakonstantinou, Victor Vianu

December 2004 **ACM Transactions on Database Systems (TODS)**, Volume 29 Issue 4

Publisher: ACM Press

Full text available: pdf(676.95 KB)   Additional Information: full citation, abstract, references, index terms

We investigate the incremental validation of XML documents with respect to DTDs, specialized DTDs, and XML Schemas, under updates consisting of element tag renamings, insertions, and deletions. DTDs are modeled as extended context-free grammars. "Specialized DTDs" allow the decoupling of element types from element tags. XML Schemas are abstracted as specialized DTDs with limitations on the type assignment. For DTDs and XML Schemas, we exhibit an $O(m \log n)$ incremental valida ...

Keywords: Update, XML, validation

9 Theory and medels II: Chart-parsing techniques and the prediction of valid editing moves in structured document authoring

Marc Dymetman

October 2004 **Proceedings of the 2004 ACM symposium on Document engineering**

Publisher: ACM Press

Full text available: pdf(311.87 KB)   Additional Information: full citation, abstract, references, index terms

We present an approach to controlled document authoring that significantly extends the functionality of existing methods by allowing bottom-up and top-down specifications to be freely mixed. A finite-state automaton is used to represent the partial, evolving, description of the document during authoring. Using a generalization of chart-parsing techniques to FSAs rather than fixed input strings, we show how the authoring system is able to automatically detect the consequences of the choices al ...

Keywords: XML, computational linguistics, document authoring tools and systems, parsing

10 Access control: XML access control using static analysis

Makoto Murata, Akihiko Tozawa, Michiharu Kudo, Satoshi Hada

October 2003 **Proceedings of the 10th ACM conference on Computer and communications security**

Publisher: ACM Press

Full text available: pdf(357.99 KB)   Additional Information: full citation, abstract, references, citings, index terms

Access control policies for XML typically use regular path expressions such as XPath for specifying the objects for access control policies. However such access control policies are burdens to the engines for XML query languages. To relieve this burden, we introduce static analysis for XML access control. Given an access control policy, query expression, and an optional schema, static analysis determines if this query expression is guaranteed not to access elements or attributes that are permitt ...

Keywords: XML, XPath, XQuery, access control, automaton, query optimization, schema, static analysis

11 Theory and medels II: Towards efficient implementation of XML schema content models

Pekka Kilpeläinen, Rauno Tuhkanen

October 2004 **Proceedings of the 2004 ACM symposium on Document engineering**

Publisher: ACM Press

Full text available: pdf(137.92 KB)   Additional Information: full citation, abstract, references, index terms

XML Schema uses an extension of traditional regular expressions for describing allowed contents of document elements. Iteration is described through numeric attributes minOccurs and maxOccurs attached to content-describing elements such as sequence, choice, and element. These numeric occurrence indicators are a challenge to standard automata-based solutions. Straightforward solutions require space that is exponential w ...

Keywords: XML schema, automaton, regular expression

12 HydroJ: object-oriented pattern matching for evolvable distributed systems

Keunwoo Lee, Anthony LaMarca, Craig Chambers

October 2003 **ACM SIGPLAN Notices , Proceedings of the 18th annual ACM SIGPLAN conference on Object-oriented programing, systems, languages, and applications OOPSLA '03**, Volume 38 Issue 11

Publisher: ACM Press

Full text available: pdf(311.06 KB)   Additional Information: full citation, abstract, references, citings, index terms

In an evolving software system, components must be able to change independently while remaining compatible with their peers. One obstacle to independent evolution is the *brittle parameter problem*: the ability of two components to communicate can depend on a number of *inessential* details of the types, structure, and/or contents of the values communicated. If these details change, then the components can no longer communicate, even if the *essential* parts of the message remain ...

Keywords: HydroJ, XML, distributed systems, dynamic dispatch, object-oriented programming, pattern matching, semi-structured data, software evolution, ubiquitous computing

13 <u>Regular expression types for XML</u>

Haruo Hosoya, Jérôme Vouillon, Benjamin C. Pierce

January 2005 **ACM Transactions on Programming Languages and Systems (TOPLAS)**,
Volume 27 Issue 1

Publisher: ACM Press

Full text available: pdf(349.70 KB)   Additional Information: <u>full citation</u>, <u>abstract</u>, <u>references</u>, <u>index terms</u>

> We propose *regular expression types* as a foundation for statically typed XML processing languages. Regular expression types, like most schema languages for XML, introduce regular expression notations such as repetition (*), alternation (|), etc., to describe XML documents. The novelty of our type system is a semantic presentation of subtyping, as inclusion between the sets of documents denoted by two types. We give several examples illustrating the usefulness of this form of su ...
>
> **Keywords**: Type systems, XML, subtyping

14 <u>Posters: One project, four schema languages: medley or melee?</u>

Makoto Murata

May 2005 **Special interest tracks and posters of the 14th international conference on World Wide Web**

Publisher: ACM Press

Full text available: pdf(7.89 KB)   Additional Information: <u>full citation</u>, <u>abstract</u>

> This talk first gives an overview of an XML project for e-Local Governments, which is under the auspices of MIAC (Ministry of Internal Affairs and Communications) of Japan. This talk then focuses on schema authoring and user interfaces. In particular, the use of four schema languages, namely RELAX NG, W3C XML Schema, DTD, and Schematron, is highlighted.

15 <u>Theory and models I: On modular transformation of structural content</u>

Tyng-Ruey Chuang, Jan-Li Lin

October 2004 **Proceedings of the 2004 ACM symposium on Document engineering**

Publisher: ACM Press

Full text available: pdf(158.89 KB)   Additional Information: <u>full citation</u>, <u>abstract</u>, <u>references</u>, <u>index terms</u>

> We show that an XML DTD (Document Type Definition) can be viewed as the fixed point of a parametric content model. Based on the parametric content model, we develop a model of modular transformation of XML documents. A fold operator is used to capture a class of functions that consume valid XML document trees in a bottom-up matter. Similarly, an unfold operator is used to generate valid XML document trees in a top-down fashion. We then show that DTD-aware XML document transformation, which co ...
>
> **Keywords**: ML, XML, bird-meertens formalism, document transformation and validation, functional programming, modules

16 <u>Theory and medels II: Supervised learning for the legacy document conversion</u>

Boris Chidlovskii, Jérôme Fuselier

October 2004 **Proceedings of the 2004 ACM symposium on Document engineering**

Publisher: ACM Press

Full text available: pdf(180.71 KB)   Additional Information: <u>full citation</u>, <u>abstract</u>, <u>references</u>, <u>index terms</u>

> We consider the problem of document conversion from the rendering-oriented HTML markup into a semantic-oriented XML annotation defined by user-specific DTDs or XML

Schema descriptions. We represent both source and target documents as rooted ordered trees so the conversion can be achieved by applying a set of tree transformations. We apply the supervised learning framework to the conversion task according to which the tree transformations are learned from a set of training examples. %Because o ...

Keywords: XML markup, legacy document conversion, machine learning

17 TIMBER: A native XML database

H. V. Jagadish, S. Al-Khalifa, A. Chapman, L. V. S. Lakshmanan, A. Nierman, S. Paparizos, J. M. Patel, D. Srivastava, N. Wiwatwattana, Y. Wu, C. Yu
December 2002 **The VLDB Journal — The International Journal on Very Large Data Bases**, Volume 11 Issue 4
Publisher: Springer-Verlag New York, Inc.
Full text available: pdf(268.39 KB)   Additional Information: full citation, abstract, citings, index terms

This paper describes the overall design and architecture of the Timber XML database system currently being implemented at the University of Michigan. The system is based upon a bulk algebra for manipulating trees, and natively stores XML. New access methods have been developed to evaluate queries in the XML context, and new cost estimation and query optimization techniques have also been developed. We present performance numbers to support some of our design decisions. We believe that the key in ...

Keywords: Algebra, Document management, Hierarchical, Query processing, Semi-structured

18 A logic you can count on

Silvano Dal Zilio, Denis Lugiez, Charles Meyssonnier
January 2004 **ACM SIGPLAN Notices , Proceedings of the 31st ACM SIGPLAN-SIGACT symposium on Principles of programming languages POPL '04**, Volume 39 Issue 1
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We prove the decidability of the quantifier-free, static fragment of ambient logic, with composition adjunct and iteration, which corresponds to a kind of regular expression language for semistructured data. The essence of this result is a surprising connection between formulas of the ambient logic and counting constraints on (nested) vectors of integers.Our proof method is based on a new class of tree automata for unranked, unordered trees, which may result in practical algorithms for deciding ...

Keywords: Presburger arithmetic, ambient, semi-structured data, substructural logic, tree automata

19 CDuce: an XML-centric general-purpose language

Véronique Benzaken, Giuseppe Castagna, Alain Frisch
August 2003 **ACM SIGPLAN Notices , Proceedings of the eighth ACM SIGPLAN international conference on Functional programming ICFP '03**, Volume 38 Issue 9
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We present the functional language CDuce, discuss some design issues, and show its adequacy for working with XML documents. Distinctive features of CDuce are a powerful

pattern matching, first class functions, overloaded functions, a very rich type system (arrows, sequences, pairs, records, intersections, unions, differences), precise type inference for patterns and error localization, and a natural interpretation of types as sets of values. We also outline some important implementation issue ...

Keywords: *CDuce, XML, XML-processing, type systems*

20 <u>Techniques for document management and document engineering: Content publishing framework for interactive paper documents</u>
Masakazu Yamanaka, Kenji Niimura, Tomio Kamada
November 2005 **Proceedings of the 2005 ACM symposium on Document engineering DocEng '05**
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Paper persists as an important medium for documents and this has motivated the development of new technologies for interactive paper that enable actions on paper to be linked to digital actions. A major issue that remains is how to integrate these technologies into the document life cycle and, specifically, how to facilitate the authoring of links between printed documents and digital documents and services. We describe how we have extended a general web publishing framework to support the produ ...

Keywords: interactive paper, publishing framework

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